The Smithsonian/NASA Astrophysics Data System

Status Report

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http://ads.harvard.edu

The ADS Project

- Established in 1989 (before the web!) as a portal for accessing astronomical data and bibliographic metadata
- Was restructured in 1994 to become an A&I service for astronomers and astrophysicists, with fulltext archive
- Has 100% penetration in astronomical community, with take-up in other areas of space sciences, engineering and physics

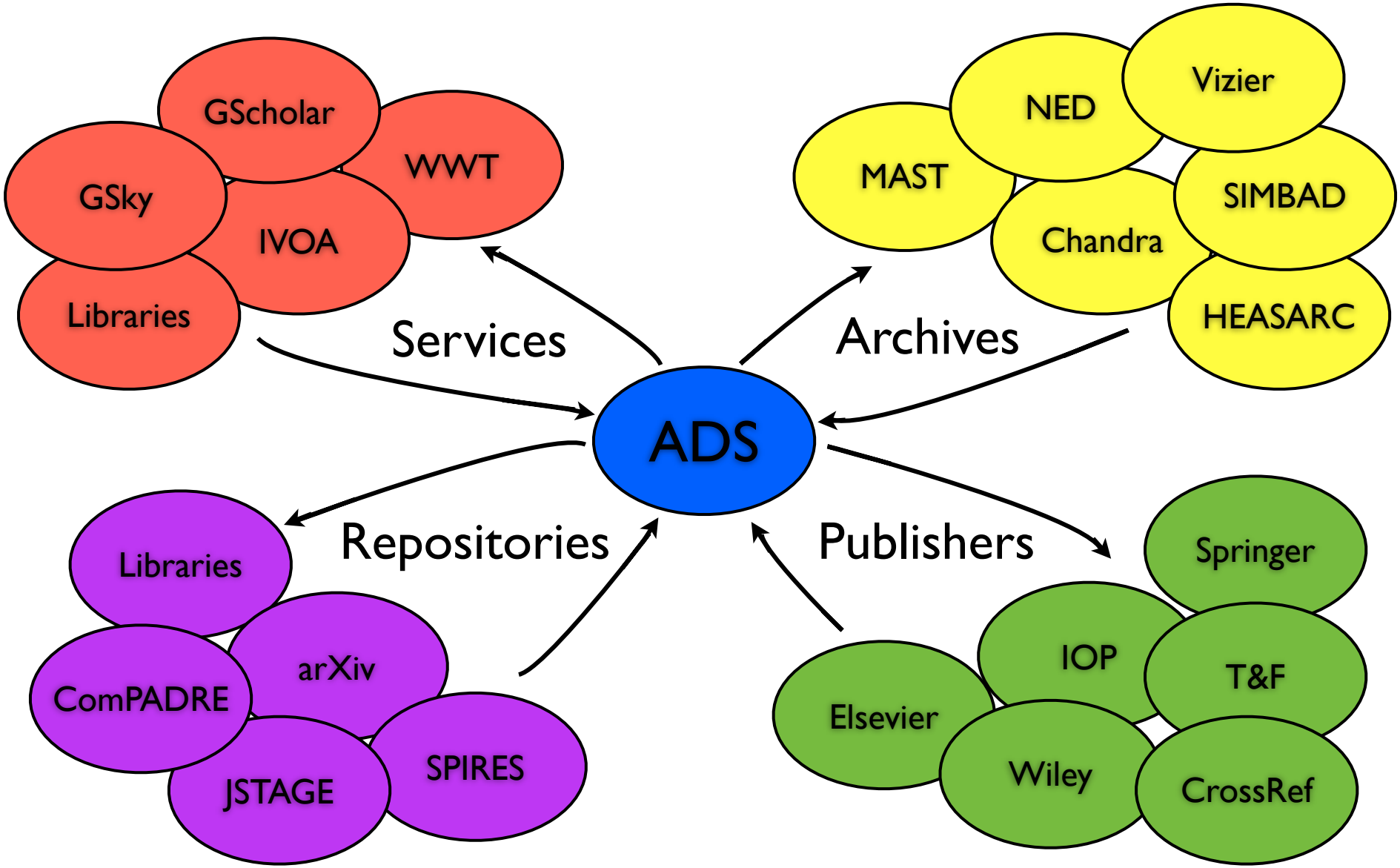
History of the ADS project (1/2)

- 1992: literature database implemented
- 1993: implemented federated search to object database
- 1994: web-based version of ADS launched
- 1995: fulltext of ApJ Letters digitized and online
- 1996: citation data incorporated in ADS; links between bib records and datasets created; first mirror site online
- 1997: indexed astronomy preprints from arXiv
- 1998: online readership via ADS > worldwide print readership
- 1999: incorporated 1.2M citations via text mining

History of the ADS project (2/2)

- 2000: incorporated usage data, citation ranking
- 2001: 10th mirror site comes online
- 2002: 300K historical scans from microfilms online
- 2003: myADS notification service launched
- 2004: introduced fulltext search, private libraries
- 2005: introduced daily database updates, RSS feeds
- 2006: introduced basic search, openURL links
- 2007: implemented user login system
- 2008: introduced topic search

ADS Collaborators



Who uses ADS

- Astronomers & Astrophysicists
- Solar physicists, planetary scientists
- Space scientists, engineers
- Geophysicists
- Physicists
- Amateur astronomers

ADS Data Holdings

- Over 8M bibliographic metadata records:
  - Astronomy: 1.7M
  - Physics: 5.4M
  - Arxiv e-prints: 590K
  - Citations: 40M (over 3.4M papers with citations)
  - Curated links: 23M (fulltext, data products, citations)
- Fulltext archive of literature:
  - 4M scanned pages, 544K articles
  - 650K pages historical material

Over past 12 months

- ingested 800K metadata records
- bibliographic metadata coverage up by 10%
- citations up by 20% to 40M
- ingested 336K pages of fulltext (180K pages historical)

ADS Usage

- Over 40K registered users (with login account)
- Over 8,000 myADS users signed up for notifications
- Over 30K regular users (> 10 queries/month)
- 1.2M users from search engines every month
- 8M database queries every month
- 16M bibliographic records retrieved every month
- 2.5M scanned article pages downloaded every month
- 1.2M fulltext downloads via ADS every month

Operations

- Collaborations and agreements with over 100 partners:
  - 21 major publishers contributing ~600 journals
  - 72 minor publishers contributing 100+ journals
  - CrossRef metadata services
  - astrophysics data archives, observatories, missions
  - other “like-minded” projects

Metadata Ingest

- Coverage: Astronomy, Planetary Sciences Physics, Geophysics, general science (Nature, Science, PNAS, etc.)
- Journals, conference proceedings, reports, observing proposals, bulletins, newsletters, PhD Thesis
- Database updates: daily from e-prints, weekly for Astronomy database, 2x month for Physics database
- Metadata feeds, completeness, quality all over the map; lots of effort goes in curation, merging of metadata, tracking provenance:
  - high-throughput, high/low quality (publishers)
  - low-throughput, hand-generated (observatories, other projects, small publications), conference proceedings, staff and contractors

Future Plans

- Restructure system architecture
- Improve database completeness and metadata curation
- Improve user interface
- Extend search capabilities
- Enhance personalization, recommendations
- Incorporate semantic web technologies

System Architecture

- New architecture for metadata curation and search based on CERN Invenio/INSPIRE
- Currently extending Invenio search interface and capability to match ADS's requirements
- Implementing pipeline for metadata ingest in new system from ADS "classic"
- Goal: alpha system online by Jan 2011

System Customizations

- ADS-style author indexing and searching
- ADS-style word parsing and indexing
- Implementation of synonym search from knowledge base (authors, text words)
- Simplified use of word weights for scoring
- Federated search of object databases
- Selection/filtering by bibliographic groups

ADS Labs

- A playground for testing new ideas, technologies
- A bridge present with the future, without having to worry about legacy too much
- Aim: receive feedback from users, test performance and impact of new tools, services
- It's OK if we break things in the labs

Labs Ideas

- Metadata enhancement (normalized keywords, affiliations, ORCID experiments)
- Infrastructure (caching, federated searching, RDF output)
- New services (recommendation, fulltext search)
- User interface (search, facets, widgets, topic browser)

New User Interface

- Looks TBD
- Remove clutter, hide complexity, use javascript/AJAX where appropriate
- Use facets throughout
- Provide recommendations, context when appropriate

Fulltext Search

- Enable searching and viewing of papers in ADS fulltext archive
- Allow searching of current content, with links to publisher's fulltext offerings
- Support text mining efforts, metadata enrichment
- Currently investigating available technologies (SOLR, Invenio)

Links to Data

- ADS provides links to data catalogs, astronomical objects, data archives
- Metadata about links provided by publishers, collaborators, librarians
- Involved in VAO Data Curation & Preservation effort to expand data linking via semantics
- Goal: enable data discovery, use literature as filter on data (and vice-versa)

Notifications: myADS

Collaborators

My citations

Recent papers

Hottest papers

myADS Notification for Astronomy

http://adsabs.harvard.edu/myADS/cache/268396607_AST.html

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myADS Personal Notification Service
for Alberto Accomazzi
Tue Nov 10 04:57:53 2009
Astronomy database

ADS Main Queries

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Physics
arXiv e-prints
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What's new

Current Tables of Contents

Astronomical Journal
Astronomy & Astrophysics
Astrophysical Journal
Astrophysical Journal Letters
Monthly Notices of the Royal Astronomical Society
Publications of the Astronomical Society of Japan
Recent Astro-PH

Search Recent Papers

Author
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Send Query

Update myADS Settings

ACCOMAZZI, ALBERTO - Citations: 223 (total 242)

2010ARIST..44....3K: Kurtz,+: Usage Bibliometrics
2009MNRAS.399.2165R: Ramírez,+: The nature of the near-infrared core source in 3C 433
2009MNRAS.399.1622G: Goyal,+: Unusual optical quiescence of the classical BL Lac object PKS 0735+178 on intranight time-scale
2009ASPC..411..384H: Henneken,+: Exploring the Astronomy Literature Landscape
2009IISys..24...74C: Chen,+: Mapping the Sloan Digital Sky Survey's Global Impact

"VIRTUAL OBSERVATORY", etc - Recent Papers

2009Obs...129..397P: Prema: Galaxy formation and evolution using the Virtual Observatory
2009LNP...791...81W: Walton,+: AstroGrid and the Virtual Observatory
2009A&A...506..455S: Solano,+: The LAEX and NASA portals for CoRoT public data
2009MNRAS.399.2231S: Scaringi,+: Classifying broad absorption line quasars: metrics, issues and a new catalogue constructed from SDSS DR5
2009SoPh..tmp..155U: Ulrich,+: Modeling Total Solar Irradiance Variations Using Automated Classification Software on Mount Wilson Data

"VIRTUAL OBSERVATORY", etc - Most Popular

2009ASPC..411..101S: Seaman,+: Optimal DN Encoding

Favorite Authors - Recent Papers

2009Ap&SS.322..101R: Rosen,+: Laboratory experiments to study supersonic astrophysical flows interacting with clumpy environments

(ASTROPHYSICS DATA SYSTEM, etc - Recent Papers

2009amos.confE..87S: Schmalz,+: Comparison of Neural Networks and Tabular Nearest Neighbor Encoding for Hyperspectral Signature Classification in Unresolved Object Detection
2009MNRAS.399.2231S: Scaringi,+: Classifying broad absorption line quasars: metrics, issues and a new catalogue constructed from SDSS DR5

(ASTROPHYSICS DATA SYSTEM, etc - Most Popular

2008ApJ...674..768O: Oyaizu,+: A Galaxy Photometric Redshift Catalog for the Sloan Digital Sky Survey Data Release 6
2009NewA...14..649B: Bora,+: Automated star-galaxy segregation using spectral and integrated band data for TAUVEX/ASTROSAT satellite data pipeline
2006MNRAS.373..845B: Ball,+: Bivariate galaxy luminosity functions in the Sloan Digital Sky Survey
2009MNRAS.392..233Z: Zhang,+: Morphology classification and photometric redshift measurement of galaxies

ADS Faceted Topic Search (Alpha)

http://adsres.cfa.harvard.edu/cgi-bin/topicFacetSearch

Apple Yahoo! Google Maps YouTube Wikipedia News (317) Popular

ADS Faceted Topic Search (alpha)

"weak lensing" Search

e.g.: "dark energy", "extrasolar planets", "weak lensing" "spin hall"

Keyword Search:
- Most relevant
- Most recent
- Most important

Subject Area Search:
- Most popular
- Most useful
- Most instructive

Review articles

ADS Home | Abstract Search | Help

ADS Query Results

http://adsres.cfa.harvard.edu/cgi-bin/topicFacetSearch?q=%22weak%20lensing%22;qtype=INSTRU

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SAO/NASA Astrophysics Data System (ADS)

objects in papers

Query Results from the ADS Database

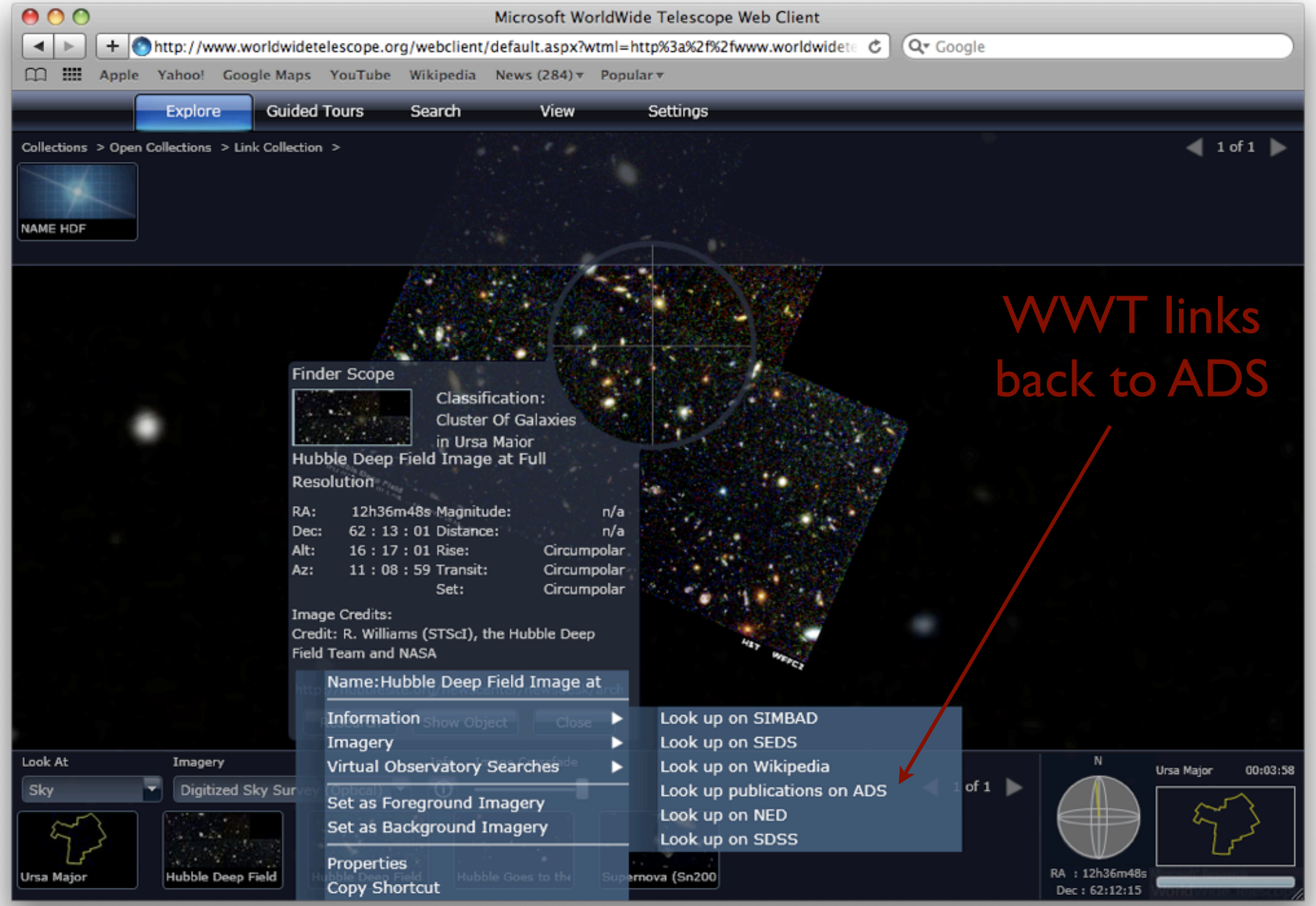
Go to bottom of page

Related Objects

NAME HDF (12)
NAME Chandra Deep Field-South (8)
ACO 1689 (8)
ACO 901 (8)
ZwCl 0024+1652 (7)
ACO 902 (7)
ACO 2390 (6)
ZwCl 1455+2232 (5)
NAME SGP (4)
CIG 2137.3-2353 (4)
ACO 2261 (4)
ACO 2219 (4)
ACO 2218 (4)
ACO 1835 (4)
ACO 1763 (4)
ACO 370 (4)
ACO 267 (4)
ACO 209 (4)
ACO 68 (4)
1E 0302.5+1717 (4)
ZwCl 1358+6245 (3)
NAME HDF-S (3)
NAME COSMOS FIELD (3)
NAME CBI (3)
NAME ACO 901A (3)
NAME ACO 901-902 SUPERCLUSTER (3)
CIG 1224.7+2007 (3)
CIG 1054.4-0321 (3)
ACO 1942 (3)
ACO 1364 (3)

Selected and retrieved **200** abstracts. Sort options

#	Bibcode / Authors	Score / Title	Date	List of Links / Access Control Help							
1	2006glsw.book..269S Schneider, P.	81.000 Weak Gravitational Lensing	n/a 2006	A	E		X	R	C	c	U
2	2008PhR...462...67M Munshi, Dipak; Valageas, Patrick; van Waerbeke, Ludovic; Heavens, Alan	68.000 Cosmology with weak lensing surveys	Jun 2008	A	E		X	R	C	c	U
3	2003ARA&A..41..645R Refregier, Alexandre	61.000 Weak Gravitational Lensing by Large-Scale Structure	n/a 2003	A	E	F	X	R	C	c	U H
4	2008ARNPS..58...99H Hoekstra, Henk; Jain, Bhuvnesh	51.000 Weak Gravitational Lensing and Its Cosmological Applications	Nov 2008	A			X	R	C	c	U
5	2003astro.ph..6465S Schneider, Peter	44.000 Gravitational lensing as a probe of structure	Jun 2003	A			X	R	C	c	U H
6	2006MNRAS.368.1323H Heymans, Catherine; Van Waerbeke, Ludovic; Bacon, David; Bernstein, Jack; Barnett	41.000 The Shear Testing Programme - I. Weak lensing analysis of simulated ground-based observations	May 2006	A	E	G	X	R	C	c	U


Microsoft WorldWide Telescope Web Client
http://www.worldwidetelescope.org/webclient/default.aspx?wtml=http%3a%2f%2fwww.worldwidete
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NAME HDF
Finder Scope
Classification:
Cluster Of Galaxies
in Ursa Maior
Hubble Deep Field Image at Full Resolution
RA: 12h36m48s Magnitude: n/a
Dec: 62 : 13 : 01 Distance: n/a
Alt: 16 : 17 : 01 Rise: Circumpolar
Az: 11 : 08 : 59 Transit: Circumpolar
Set: Circumpolar
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Ursa Major
Hubble Deep Field
Supernova (Sn200
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Ursa Major
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RA : 12h36m48s
Dec : 62:12:15
WWT links back to ADS

Recommendations

The Smithsonian/NASA Astrophysics Data System

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On the influence of relativistic effects on X-ray variability of accreting black holes

Życki, Piotr T.; Niedźwiecki, Andrzej

Monthly Notices of the Royal Astronomical Society, Volume 359, Issue 1, pp. 308-314.

X-rays produced by compact flares corotating with a Keplerian accretion disc are modulated in time by Doppler effects. We improve on previous calculations of these effects by considering recent models of intrinsic X-ray variability, and we compute the expected strength of the relativistic signal in current data of Seyfert galaxies and black hole binaries. Such signals can clearly be seen in, for example, recent XMM-Newton data from MCG-6-30-15, if indeed the X-rays are produced by corotating flares concentrated toward the inner disc edge around an extreme Kerr black hole. The lack of the signal in the data collected so far gives support to models where the X-ray sources in active galaxies do not follow Keplerian orbits close to the black hole.

Keywords: accretion, accretion discs - relativity - galaxies: active - X-rays: binaries - X-rays: individual: MCG-6-30-15.

DOI: *10.1111/j.1365-2966.2005.08887.x*

Related Articles

2008ApJ...679L..37L Liu et al, Precise Measurement of the Spin Parameter of the Stellar-Mass Black Hole M33 X-7

2006ApJ...646..394M Miller et al, Simultaneous Chandra and RXTE Spectroscopy of the Microquasar H1743-322: Clues to Disk Wind and Jet Formation from a Variable Ionized Outflow

2009NewA...14..674F Foellmi, What is the closest black hole to the Sun?

2009ApJ...695..888U Ueda et al, GRS 1915+105 in "Soft State": Nature of Accretion Disk Wind and Origin of X-ray Emission

1973A&A....24..337S Shakura et al, Black holes in binary systems. Observational appearance.

2007ARA&A..45..441M Miller, Relativistic X-Ray Lines from the Inner Accretion Disks Around Black Holes

2006Natur.444..730M McHardy et al, Active galactic nuclei as scaled-up Galactic black holes

The ADS is Operated by the Smithsonian Astrophysical Observatory under NASA Grant NNX09AB39G

Conclusions

- ADS project has 100% penetration in community, used by other disciplines (physics) and general public
- Current project focus is IT restructuring, technology realignment, UI redesign (2 yr timeline)
- Many new features and technologies being tested and considered, ready to collaborate with partners (e.g. ORCID)
- Future plans include support for text mining, linked data applications, integration of observational metadata, increased personalization & recommendations

Demo

- Faceted Topic Search
- Keyword Topic Cluster
- Article Recommeder (alpha)